Design and Technology Project and Folio: Eco-Wear - Designing a Sustainable Tote Bag

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Introduction

There were six steps in the process used to design the tote bags. Students, while working on Define, formed a statement about protecting the environment. They saw how plastic bags are damaging and looked for an alternative way to use. At this point, people began wanting products to be helpful to both humans and the environment. They then thought about using recycled denim, jute, upcycled materials and hemp as ways to help the environment. People into fashion searched for current styles and effortless fashion ideas and figured out how today's garments are put together. The theories they believed in about people influenced the materials and type of design they picked. At this point, the students planned a lot and created a lot of sketches to think about how their thing would turn out (Baloyi, 2022). They pre-marked and pre-measured the pockets, linings, wording and handles and sewed together some scraps to see the results. While working on the project, students picked up new information by looking for and fixing problems that could happen near the end.

In this part of the process, tote bags were made by operating machines and by doing hand stitching. Clothing was made strong and attractive thanks to them by lining pieces with interfacing which helped secure stitches and also adding borders. They tested their result to make sure it was according to the guidelines given in the design and task. They discussed if their items were sustainable, would help the community and if they could create things that customers could benefit from. Thus, students get to think critically and feel satisfied when they notice where their work needs improvement.

Context Paragraph

The Australian Curriculum for Design and Technologies (Years 7 and 8) is followed, mainly focusing on the Materials and Technologies Specializations context (Cevallos & Olivito 2015). It encourages students to discover eco-

friendly materials and work like a designer to make a usable tote bag. Due to global attention on protecting the environment, the project inspires students to choose designs that help save resources and follow the principle of making less waste. During the project, students will investigate what recycled cotton, denim, hemp and jute can do for sustainable fashion. At this point, they will start to come up with and formulate design ideas that mix beauty with practicality. Students will make a tote bag prototype and a final product following given criteria about durability, size and being eco-friendly (Baloyi, 2022). At the end, students assess their work based on its use and effects on the environment which encourages them to think carefully about design.

Design Brief

Project Title: Eco-Wear: Designing a Sustainable Tote Bag
Client: Environmentally-conscious individuals who need practical and sustainable alternatives to plastic bags.
Design Problem: There is a growing demand for reusable bags due to the environmental impact of plastic waste. Consumers seek durable, stylish, and eco-friendly tote bags.
Design Criteria:

- Must be constructed using sustainable or recycled materials
- Should be large enough to carry everyday items
- Aesthetically appealing to reflect eco-conscious values
- Strong and durable for regular use
- Incorporate basic sewing techniques

The purposes of this design brief are to have students design a bag that serves our needs and the environment. Considering what clients expect, the setting and how things look, students learn to blend cleverness with practical issues.

Research

To start, students did detailed research on the harm textile waste causes and the advantages of using eco-friendly materials. They looked into several green spreads, giving extra attention to recycled cotton and denim because these materials are very strong and can be found easily in second-hand stores. Not only are recycled textiles durable, but they also mean fewer virgin fabrics have to be made which takes many resources. The textile materials jute and hemp which are biodegradable, use much less water and pesticides to grow, so students also studied them as great alternatives for sustainability (Claxton & Kent, 2020). A further important sector of research focused on upcycling textiles, taking materials from old jeans and t-shirts and recycling them to avoid filling up landfills. Students also studied other environmental issues caused by the textile industry such as water pollution, huge amounts of chemicals used and greater landfill waste. They discovered that fast fashion accelerates these difficulties by urging people to buy more affordable, poor-quality clothes which harms nature even more. From this knowledge, it was clear that design ideas should focus more on sustainability.

Students who want to create sustainable fashion focused on the works of brands and designers that value slow fashion and care for the environment. Popular DIY eco bags that combine bold impact with minimal design were examined and the designers noted the parts they found effective. Because of this, students were encouraged to examine how an object both works and appears. At the end, students studied different construction techniques needed to develop a sturdy tote bag. They saw that sewing the edges together makes the product stronger, how interfacing helps strengthen the bottom section and improved their abilities with both machine and hand-made stitches (Han & Suh, 2016). The thorough research in this phase

helped the team make smart, considered and sustainable choices during the project.

Ideas Generation

Following the research phase, students brainstormed several ideas considering the following factors:

- Type and availability of materials
- Purpose of the bag (e.g., daily shopping, school use, etc.)
- Visual appeal and messaging

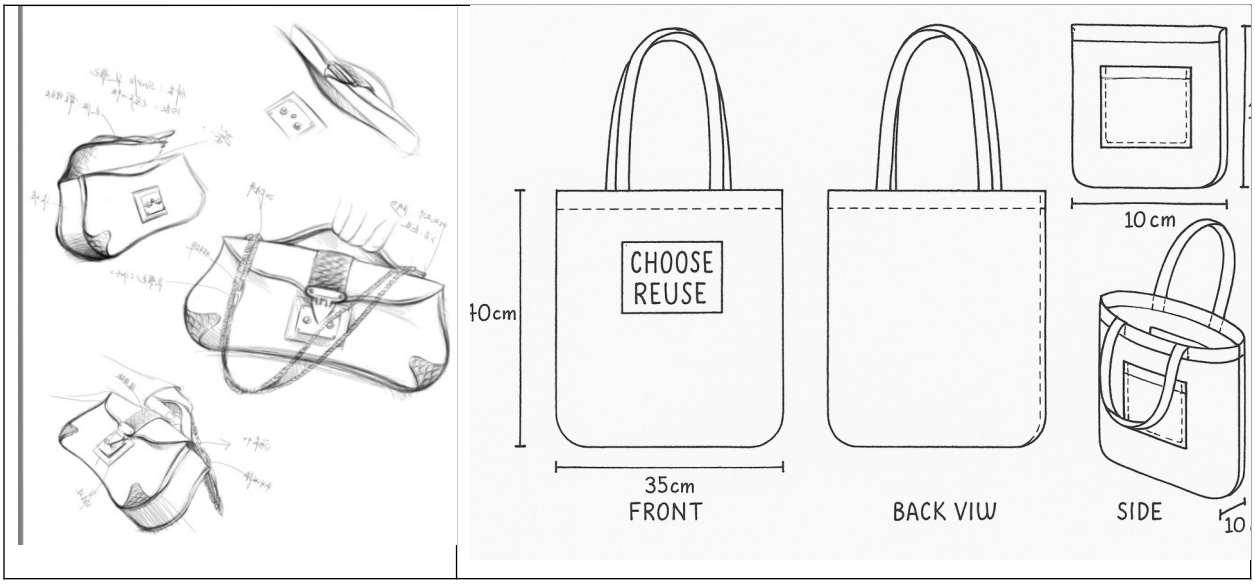
Concepts:

- **Design A:** Tall, vertical tote made from old jeans with a contrasting cotton patch pocket.
- **Design B:** Squared, foldable tote with short handles and natural dye patterns.
- **Design C:** Reversible bag with one side denim and one side printed cotton.

After choosing both appearance and how the product will operate, the students liking the merge of Designs A and C. They decided that the outer material would be denim and the inner lining would be made from cotton fabric. An environmental awareness slogan was selected and put clearly on the front of the bag.

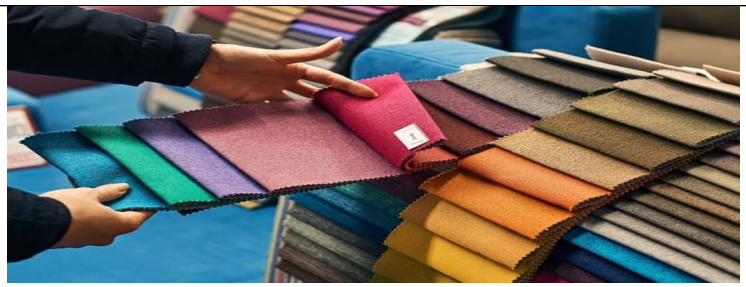
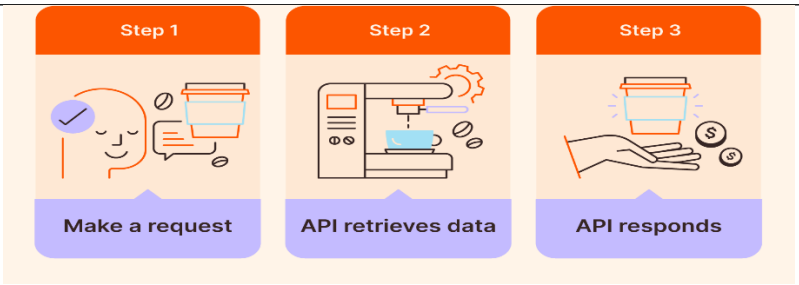
Sketches

The sketch includes images of the front, side and back of the eco-friendly tote bag with 40cm for its height, 35cm for its width and a base that's 10cm deep. Handle placement marks a length of 60cm which makes the bag comfortable to carry by the shoulder strap. The design also includes how the inside looks, with cotton lining and a small pocket on one side perfect for keys or a phone. A patch with a sustainability message is attached to the shirts front panel (Kämäräinen, 2020). These diagrams guided the fabric cutting and joining process to guarantee correctness, working function and fulfilling the sustainability requirements checking that all specifications for sustainability, usability and looks had been completed.



Prototype

A set of photographs is shown down below, recording every key stage in building the prototype. Prototype Construction Stages

Fabric Selection and Preparation: They chose materials that were easy to work with and would last a long time, such as old denim jeans and a patterned cotton shirt. Every fabric was washed before we started to guarantee hygiene and proper working.	
Measuring and Cutting: Students made sure the fabric was cut appropriately by following the measurements from the design plan, using precise tools.	
Assembling the Software API: The denim outer material and the cotton inner material were put together using both machines and hand-tailoring. They practised simple straight stitches for general sewing.	
Seam Reinforcement: Stitching was improved at the seam area by using backstitching and zigzag methods (Smith et al., 2017). Using these tricks stops the bag from fraying and helps it hold up well when carried frequently	

Base Making: The handles were sewn from old curtains, because they have a firm weave. To secure them well, I used box and cross stitching around the top seam	
Aesthetic and Messaging options: The final step was adding an eco-slogan patch to the outside of the tote, both to represent the environment and make the design stand out.	

Project Management Statement

Several approaches have been added to the unit to motivate students in the project, “Designing a Sustainable Tote Bag.” The project is based on a genuine issue important to our world's environmental sustainability that many students are finding more relevant as time goes on. Because they work on a problem that concerns their present and future, like reducing plastic and promoting sustainability in clothes, students feel empowered and committed to what they do. Bringing this practice to real life makes students find it more valuable and helpful for themselves (Kämäräinen, 2020). Textiles involve both sight and touch, which makes them suitable for many types of learners. Sketching, arranging patterns on paper, and thinking about materials, java helps visual learners become more innovative and aware of space. When people learn kinesthetically, making the bag by cutting, sewing and joining parts benefits their involvement. Using a variety of materials helps the attention, aids learning and builds confidence in students who struggle in conventional schoolwork.

They learn together by collaborating in chats, feedback sessions and demos. For example, when they are brainstorming ideas, students talk about what they want to do and share their comments to the group. They help develop critical thinking, the skill to solve problems and communication skills. Sorting students into small groups during research and design activities helps them cooperate and come up with a variety of approaches. Monitoring each other's solutions helps students understand what works and what does not which encourages them to keep improving. Students also experience more freedom in choices about appearance and game ideas. Even though the brief described the main principles about sustainability, the students decide what materials, design, slogan and features to use. When students have so much agency, they start to enjoy learning more and personalize their education. Reporters and timelines are set up to help each student understand where they are, track their progress and plan what they still have to do. Activities that involve students learning by doing and solving problems help them develop a lot and improve their knowledge (Lundblad & Davies, 2016). But means that students are ready for studying design, textiles or sustainability and at the same time, it empowers them to think creatively and do good for others worldwide. Since the project follows research, idea generation, testing, manufacturing and analysis, it helps students learn real-life techniques for an authentic approach to curriculum.

Project Design

Students used a six-stage design process to produce their sustainable tote bags. During Define, students came up with a detailed brief explaining how to deal with environmental sustainability. They were asked to reflect on the impacts of plastic bags and find a good alternative design for a new bag. This was when design began to focus on making benefits social and environmental rather than personal. At this stage, students did research and learned about recycled denim, jute, upcycled materials and hemp as possible sustainable resources (Mukendi et al., 2020). They looked into how

clothes are constructed and studied some sustainable and eco-friendly designs as well as DIY projects to see what is popular in the fashion world now. They used what they learned about people to choose their materials and develop the design. In Ideate, students created many drawings and ideas for their designs, focusing on usefulness, looks and the materials they would use (Paru, 2024). They made diagrams to illustrate their plans such as where the pockets, linings, slogans and handle would be. They used scrap materials to do basic measurements, practice stitching and try out construction techniques. Getting their hands dirty helped students work through issues that might appear in the finished product.

During the Create stage, tote bags were made by both sewing with machines and by hand. They made sure to sturdy up seams, join pieces with interfacing and apply fancy decorations to maintain a good appearance and long life. At the final Evaluate stage, students checked if their final result followed the requirements outlined in the brief and design. They took into account if their products could be made sustainably, if they were functional and how well they were constructed. This process helped students use critical thinking skills and be proud of what they accomplished while finding what needed to be improved.

Reflective Statement

Their work with the sustainable tote bags was organized by a six-stage design process. While focusing on Define, students developed a clear brief outlining ways to take care of the environment. They had to consider what impact plastic bags have and come up with a better idea for a replacement. At this time, designers started thinking about ways to make design more social and environmentally friendly. At this point, students looked into recycled denim, jute, upcycled materials and hemp to see if these were good resources for sustainability (Saavalainen, 2025). They learned how clothes are put together and looked into ecological and easy-to-make designs,

checking what's new in the world of fashion (Valentine et al., 2017). They chose what to use and built the design based on what they understood about people. At this stage, students made many sketches and thoughts for their plans, thinking about functionality, appearance and what they would construct them with. Their plans were shown in drawings where the pockets, linings, slogans and handle were marked. They did basic measurements and stitching on scrap material to test their construction methods. Students learned by getting involved with the process and figuring out problems that could occur when the project is finished.

At this phase, the tote bags were put together by sewing with machines as well as by hand. So, clothing looked good and remained durable, they reinforced the seams, joined parts with interfacing and added decorative touches (Vuletich, 2015). At this phase, students made sure their outcome responded to the criteria listed in the task and its design. They considered if what they made could be sustainable, if customers would find them useful and how they were made. Using this process, students could use critical thinking skills and feel proud of themselves as they identified areas to improve.

Conclusion

The design process followed by the tote bags was split into six steps. With focusing on Define, students crafted a statement that presented ideas for caring for the environment. They realized the damage plastic bags do and searched for a better way to replace them. Then, designers began considering how to design products that are friendly to people and the planet. By this point, they examined recycled denim, jute, upcycled materials and hemp as possible eco-friendly products. Fashionistas looked into modern style and easy designs and learned the process involved in putting today's clothes together (Smith et al., 2017). What they believed about how people function helped them select materials and construct the

design. At this point, students did a lot of planning and came up with lots of sketches, thinking about how their thing would work and how it should look. They drew the patterns with the pockets, linings, messages and handles marked and measured and sewed them on scraps to see if their ways worked. Students built their knowledge while looking for and solving issues that might arise at the project's end.

During this phase, workers both operated machines and did hand stitching to make the tote bags. They made clothing strong and allowed it to remain stylish by arranging parts together with interfacing, providing reinforcement to seams and including extras such as borders. Students checked their outcome to see that it met all the requirements given in the design and task. They thought about whether their products would be environmentally sustainable, whether they would be beneficial for customers and how they came about. So, students can practice critical thinking and feel accomplished as they see where their work can be improved.

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